AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

OMB No. 0690-0008

___ 1. CONTRACT ID CODE N/A

___ 2. AMENDMENT/MODIFICATION NO. AMENDMENT 0002

3.EFFECTIVE DATE APRIL 27, 2000

___ 4. REQUISITION/PURCHASE REQ. NO. NRMAE000000020

5.PROJECT NO. (If applicable)

___

6. ISSUED BY CODE: OFA611:WLV
U.S. DEPARTMENT OF COMMERCE/NOAA
ACQUISITION MANAGEMENT DIVISION
ADP CONTRACTS BRANCH
1305 EAST WEST HIGHWAY, ROOM 7604
SILVER SPRING, MD 20910

7. ADMINISTERED BY CODE
(If other than Item 6)

___ 8. NAME AND ADDRESS OF CONTRACTOR (No. Street, County, State and ZIP Code)

[X]9A. AMENDMENT OF SOLICITATION NO.
52-DDNR-0-90030

9B. DATED (See Item 11)
MAR 28, 2000

ALL OFFERORS

[ ]10A. MOD. OF CONTRACT/ORDER NO.

10B. DATED (See Item 13)

Code:
FACILITY CODE:

___ 11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

___ [X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [ ] is extended, [X] is not extended. Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning 1 copy of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or © By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

___ 12. ACCOUNTING AND APPROPRIATION DATA (If required)

NOT APPLICABLE

___ EXCEPTION TO STANDARD FORM 30 STANDARD FORM 30(REV 10-83)
APPROVED BY GSA/IRMS 9-87 FAR(48 CFR) 53.243
AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT
Solicitation No.: 52-DDNR-0-90030 SF30, Page 2 of 3 Pages
Amendment No.: 0002

___ 13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES
THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

[ ] A.THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) _____ THE
CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT/ORDER NO. IN ITEM 10A.

[ ] B.THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data,etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

[ ] C.THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

[ ] D.OTHER (Specify type of modification and authority)

___ E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

___ 14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings,
including solicitation/contract subject matter where feasible).

1. The purpose of this Amendment is to revise the Solicitation as follows:

SECTION J

o Section J.3, Benchmark Instructions has been revised. Specifically, some of the “Notes” in Section J.3.2.2.2, Running the LSC Throughput Benchmark, have been revised to reflect corrections to cited segments. Pages J-9, J-10, and J-13 should be removed and replaced with the revised Pages J-9, J-10, and J-13.

[Continued on Page 3]

Except as provided herein, all terms and conditions of the document referenced
in Item 9A or 10A, as heretofore changed, remain unchanged and in full force and effect.

___ 15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) WILLIAM L. VOITK Contracting Officer
___ 15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	16B. UNITED STATES OF AMERICA _____ (Signature of Contracting Officer
___ 15C. DATE SIGNED	16C. DATE SIGNED

___ EXCEPTION TO STANDARD FORM 30 STANDARD FORM 30(REV 10-83)
APPROVED BY GSA/IRMS 9-87 FAR(48 CFR) 53.243

SECTION L

o L.6.1, Technical Proposals, second paragraph, fifth sentence is changed to read as follows: "The technical proposal must be prepared using Helvetica-Oblique or italicized Helvetica font in 10 point size for all text portions." All other sentences within this paragraph remain unchanged. Page L-8 of the Solicitation should be removed and replaced with the enclosed Page L-8.

2. This Amendment also responds to vendor's questions received since issuance of the Solicitation (Question 43) through Question 129. These responses are included as Attachment A to this Amendment. NOTE: The questions and answers are also posted to the GFDL web site at: http://www.gfdl.gov/hpsc

If there are any disparity between the questions and answers on the web site and this Amendment, this Amendment shall prevail. Any additional questions received will be responded to in a subsequent Amendment.

stream will be submitted as part of the completion process of the segment which is running. The details of the submission scenario are described below.

The queuing system should be "live" and begin initiating jobs as they are submitted. The Government acknowledges that there may be start-up effects associated with flooding the queuing system with 29 jobs, but knows of no other reasonable way to assign a start time from which to measure the required 4 hour runtime maximum. The start time is measured from the time the first job is submitted (e.g., when the “Enter” key is pressed to execute the submission shell script).

It is desirable to run the Throughput Benchmark on a Test System that is as close to the offered system as possible. Offerors are cautioned that benchmark environments, procedures and methodologies which are judged by the Government to lack generality and/or extensibility for the lab will be penalized and run the risk of being rejected outright as non-compliant.

The details of the Throughput Benchmark job structure are as follows:

1. FMS Lo-resolution T42L20 coupled to 2deg MOM3 ocean

    a. 4 jobs of 2 segments each comprised of 180 days per segment (FMS: time_units=days; trun_length=180; MOM: NDAYS=180.0, diag=18.0).
    b. Segment 1 of each job is started from input data.
    c. After "storage" of all output files to archive disk, the segment 1 run script should submit the script for segment 2.
    d. **Segment 2 is re-run from the original input data; there is no unique segment 2**.

NOTE: Because there are multiple streams of this job running over the same time domain, care must be taken that output from one stream does not overwrite that of another. Moreover, the output from segment 2 should not overwrite the output from segment 1.

2. FMS Hi-resolution T42L20 coupled to 1deg MOM3 ocean

    a. 3 jobs of 2 segments each comprised of 21 days per segment (FMS: time_units=days; trun_length=21; MOM: NDAYS=21.0, diag=3.0).
    b. Segment 1 of each job is started from input data.
    c. After "storage" of all output files to archive disk, the segment 1 run script should submit the script for segment 2.
    d. **Segment 2 is re-run from the original input data; there is no unique segment 2**.

NOTE: Because there are multiple streams of this job running over the same time domain, care must be taken that output from one stream does not overwrite that of another. Moreover,

the output from segment 2 should not overwrite the output from segment 1.

3. FMS Spectral Atmosphere T106L30

   a. 2 jobs of 2 segments each comprised of 48 hours per segment (time_units=hours; trun_length=48).
   b. Segment 1 of each job is started from input data.
   c. After "storage" of all output files to archive disk, the segment 1 run script should submit the script for segment 2.
   d. Segment 2 is run from the input data and the restart file generated by the successful completion of segment 1.

NOTE: Because there are multiple streams of this job running over the same time domain, care must be taken that output from one stream does not overwrite that of another.

4. FMS Lo-resolution N45L20 coupled to 1deg MOM3 ocean

   a. 4 jobs of 2 segments each comprised of 14 days per segment: (FMS: time_units=days; trun_length=14; MOM: NDAYS=14.0, diag=2.0)
   b. Segment 1 of each job is started from input data.
   c. After "storage" of all output files to archive disk, the segment 1 run script should submit the script for segment 2.
   d. **Segment 2 is re-run from the original input data; there is no unique segment 2**.

NOTE: Because there are multiple streams of this job running over the same time domain, care must be taken that output from one stream does not overwrite that of another. Moreover, the output from segment 2 should not overwrite the output from segment 1.

5. FMS Hi-resolution N90L30 coupled to 1deg MOM3 ocean

   a. 3 jobs of 2 segments each comprised of 5 days per segment (FMS: time_units=days; trun_length=5; MOM: NDAYS=5.0, diag=1.0).
   b. Segment 1 of each job is started from input data.
   c. After "storage" of all output files to archive disk, the segment 1 run script should submit the script for segment 2.
   d. **Segment 2 is re-run from the original input data; there is no unique segment 2**.

NOTE: Because there are multiple streams of this job running over the same time domain, care must be taken that output from one stream does not overwrite that of another. Moreover, the output from segment 2 should not overwrite the output from segment 1.

NOTE: Because there are multiple streams of this job running over the same time domain, care must be taken that output from one stream does not overwrite that of another.

14. HIM p25deg MESO

a. 1 job of 2 segments comprised of 2592 time steps per segment.
b. Segment 1 of the job is started from input data at t=0 (initial=true).
c. After "storage" of all output files to archive disk, the segment 1 run script should submit the script for segment 2.
d. Segment 2 is simply a re-run of segment 1.

NOTE: The output from segment 2 should not overwrite the output from segment 1.

NOTE: Three of the job streams have been combined into a single experiment for HIM (that is the total run length of HIM has been specified such that it would take 36-T90 equivalent processor hours to complete). This will require that HIM be run on a proportionately larger number of processors than other experiments in the job mix.

As each experiment has 2 segments, there are a total of 29x2=58 experiment segments to be run for the Throughput Benchmark. There should be unique ASCII and archive output for each segment at the end of the throughput test.

As per section J.3.1.1, Source Code Changes, the baseline measurements required of all compliant offers must be made with only Class A modifications using MPI as the message passing library for those systems employing an explicit message communication library in the benchmark. Any extrapolations of values from Test Systems to the "baseline" performance of the offered system must be based on this data.

As further described in section J.3.1.1, the Offeror may supply additional measurements and extrapolations based on any combination of Class A, B, C, or D modifications. But as noted, such a data set is accepted and assessed risk, or rejected, as a whole. The Government will not attempt to selectively assess modifications associated with a given data set.

J.3.2.2.3 LSC Throughput Benchmark Output

The Offeror shall keep the responses to this section focused on the technical and engineering aspects of the benchmark data as pertains to their proposed solutions. Appropriate data includes CONCISE descriptions of Test System configuration and extrapolation and demonstration methodologies. References to competitors or other aspects of the general computing market place are NOT appropriate material for this section.

1. Provide a complete, concise description of the system configuration used for the

Additional information regarding the LTD may be found in section J.3, Benchmark Instructions.

LTDs will take place during a single visit to each Offeror in the Competitive Range. The Government will allocate an Offeror two consecutive days for the LTD. The LTD will begin at 9:00 AM and end no later than 5:00 PM local time on the first day . If the Offeror is unable to successfully complete the LTD on the first day, the LTD will be repeated the second day. Should an Offeror successfully complete a portion(s) of the LTD on the first day, at the Government's discretion, the Offeror may be required to complete only the remaining or unsuccessful portion(s) the second day. If any portion of the LTD is performed on the second day, it will begin at 9:00 AM local time and will terminate before 3:00 PM. If the Offeror is unable to successfully complete the LTD on the second day, the Government will not provide another opportunity to successfully complete the LTD. Failure to successfully complete the LTD may, but will not necessarily, result in disqualification of the Offeror from further consideration. Such failure may also result in downgrade of the Offeror's proposal.

L.6 PREPARATION OF PROPOSALS

Proposals shall be prepared and submitted as described below.

NOTE: The terms "statement of need", "specification", and "statement of work" used in this Section are synonymous.

L.6.1 TECHNICAL PROPOSALS

The technical proposal will be used to evaluate offerors' capabilities to provide and perform the requirements detailed in section C, the Statement of Need.

The technical proposal must be organized with sections tabbed as described below. For each tab, a numbered list of proposal instructions is given below. A specific response must be given to each numbered instruction. To keep each tab independently readable, responses of the form "Same as tab 6, instruction 7" or "Features same as LSC" are not permitted. The technical proposal must be prepared using the Helvetica-Oblique or italicized Helvetica font in 10 point size for all text portions. It must be formatted to print double-sided on 8.5" by 11" paper with 1" margins on all sides. Page numbers must be printed in the bottom margin, centered, in the format "tab - page", where tab is the tab number, and page begins at 1 for each tab. The requested hardcopies must be spiral or "wiro" bound.

The technical proposal must use October 1, 2000, as the start of the HPCS system life. Upgrades must be specified as "month/year", where month is 1 to 12, and year is 2000 or larger. The user

Q43 Is ferret still a benchmark code?

A43 No.

Q44 Can the Government please provide a portable version of "splitlib" for use with the LAN benchmark.

A44 The script "mergelib" and the source file "splitlib.c" may be obtained from ftp://ftp.gfdl.gov/perm/GFDL_MOM/VERSION_1.1/

Q45 FMS Spectral Atmosphere T42L20 coupled to 2deg MOM3 ocean. The benchmark Section J.3.2.2.2 describes segments comprised of <#time units> per segment. Please verify that the run lengths that are set in the provided run scripts are correct.

A45 Please see the amended Benchmark Instructions located in the file Sectionj.3_amend1.pdf at ftp://ftp.gfdl.gov/pub/ben/update_040400/.

Q46 FMS Spectral Atmosphere T42L20 coupled to 1deg MOM3 ocean. The benchmark Section J.3.2.2.2 describes segments comprised of <#time units> per segment. Please verify that the run lengths that are set in the provided run scripts are correct.

A46 Please see the amended Benchmark Instructions located in the file Sectionj.3_amend1.pdf at ftp://ftp.gfdl.gov/pub/ben/update_040400/.

Q47 Is the file T42.mg_drag.res f77 blocked?

A47 The file T42.mg_drag.res sent out on the tape with the final benchmarks was COS-blocked, not f77-blocked. An f77-blocked version of this file is now available at ftp://ftp.gfdl.gov/pub/ben/update_040400/

Q48 FMS Spectral Atmosphere T106L30. The benchmark Section J.3.2.2.2 describes segments comprised of <#time units> per segment. Please verify that the run lengths that are set in the provided run scripts are correct.

A48 Please see the amended Benchmark Instructions located in the file Sectionj.3_amend1.pdf at ftp://ftp.gfdl.gov/pub/ben/update_040400/.

Q49 FMS Lo-resolution N45L20 coupled to 1deg MOM3 ocean. The benchmark Section J.3.2.2.2 describes segments comprised of <#time units> per segment. Please verify that the run lengths that are set in the provided run scripts are correct.

A49 Please see the amended Benchmark Instructions located in the file Sectionj.3_amend1.pdf at ftp://ftp.gfdl.gov/pub/ben/update_040400/.

Q50 FMS Hi-resolution N90L30 coupled to 1deg MOM3 ocean. The benchmark Section J.3.2.2.2 describes segments comprised of <#time units> per segment. Please verify that the run lengths that are set in the provided run scripts are correct.

A50 Please see the amended Benchmark Instructions located in the file Sectionj.3_amend1.pdf at ftp://ftp.gfdl.gov/pub/ben/update_040400/.

Q51 FMS Hi-resolution N270L40 Atmosphere. The benchmark Section J.3.2.2.2 says that the N270L40 is:

a) 1 job of 2 segments comprised of 69 minutes per segment:
(time_units=minutes, trun_length=69).
b) Segment 1 of the job is started from input data.
c) After "storage" of all output files to archive disk, the segment 1 script should submit the script for segment 2.
d) Segment 2 is simply a re-run of segment 1.

Concerning c) the provided N270_amip.run script submits the N270_amip_reload.run script which itself runs 2 segments so rather than 1 job of 2 segments you have 1 job of 3 segments.

The N270_amip_reload.run script writes to the amip/N270R directory instead of the amip/N270 directory. There was no verify/thruput/N270R directory provided. Is there any need for the N270_amip_reload.run script?

The verify/thruput/N270 directory only has results for a single segment. Having the N270_amip.run script submit itself will result in d) using the restart data generated in b) and written in c) rather than using input data. Is d) started from input data as in b) or is it supposed to use the restart data written in c)?

A51 For the FMS Hi-resolution N270L40 Atmosphere run in the LSC throughput benchmark, the instructions in Section J.3.2.2.2 were changed by Amendment 0001 to read:

a) 1 job of 2 segments comprised of 69 minutes per segment:

(time_units=minutes, trun_length=69).

b) Segment 1 of the job is started from input data.

c) After "storage" of all output files to archive disk, the segment 1 script should submit the script for segment 2.

d) Segment 2 is run from the input data and the restart file generated by the successful completion of Segment 1.

The script N270_amip_reload.run does NOT run 2 segments - the number of times this script reloads is determined by an output file created by Segment 1.

Verification files for Segment 2 will be provided at ftp://ftp.gfdl.gov/pub/ben/update_040600/.

Q52 MOM3 1deg L50 ocean. The benchmark Section J.3.2.2.2 describes the job as 2 segments comprised of 10.5 days per segment:(days=10.0,diag=10.0). The run script provided defines days=10.0, diag=1.75. The verify file has days=10.0, diag=10.0. Which is correct?

A52 The scripts and the verification files are correct. Section J.3 was changed by Amendment 0001 to reflect this.

Q53 MOM3 1deg L50 ocean. If we use the kppmix.f file provided in the MOMSRC_base directory we do not match the answers provided. However, if we use the kppmix.F file that was provided with the pre-release benchmarks, we do match the provided answers. Is it possible that the verify file for this case was run with the pre-release rfp source for kppmix.F?

A53 The results of prior runs were inadvertently included in the verify directory. A corrected set of verification files are available at ftp://ftp.gfdl.gov/pub/ben/update_040600/.

Q54 MOM3 2deg L36 ocean. The benchmark Section J.3.2.2.2 describes the job as 2 segments comprised of 180 days per segment:(days=180.0,diag=180.0). The run script provided defines days=180.0, diag=30.0. The verify file has days=180.0, diag=30.0. Which is correct?

A54 The scripts and the verification files are correct. Section J.3 was changed by Amendment 0001 to reflect this.

Q55 MOM3 3deg L25 + tracers. The benchmark section J.3.2.2.2 describes the job as 2

segments comprised of 1800 days per segment:(days=1800.0,diag=1800.0). The run script provided defines days=1800.0, diag=300.0. The verify file has days=1800.0, diag=300.0. Which is correct?

A55 The scripts and the verification files are correct. Section J.3 was changed by Amendment 0001 to reflect this.

Q56 MOM3 p5deg MESO. The benchmark Section J.3.2.2.2 describes the job as 2 segments comprised of 45 days per segment:(days=45.0,diag=45.0). The run script provided defines days=45.0, diag=7.5. The verify file has days=45.0, diag=7.5. Which is correct?

A56 The scripts and the verification files are correct. Section J.3 was changed by Amendment 0001 to reflect this.

Q57 EOF. Can we use the "machine=workstation" assignment rather than the "machine=CRAY" assignment in the run script?

A57 Yes.

Q58 LAN. Although we use "GRAPHICS=grads" we get many unresolved symbols that seem to be from NCAR GRAPHICS. Does GFDL expect us to acquire NCAR GRAPHICS for this benchmark?

A58 Yes. Compile and load times are of particular interest on the AC, and although this version of the benchmark does not use the NCAR graphics library, it is needed in the day-to-day analysis environment (and of course, it is required software).

Q59 Section H.7 SITE PREPARATION states that the Government shall prepare the site at its own expense. Will the Government contract for this outside of this procurement or is it the Government's intent to have the Contractor manage this work? Also, if the Contractor is to manage the site preparation, is the cost of this outside of the funding for this procurement?

A59 Section H.7 of the RFP has been revised (Amendment 0001) to state that the Contractor shall prepare the site at its own expense and in accordance with the equipment environmental specifications furnished in their proposal.

Q60 Can you give us any insight into the following error message from the AC benchmark LBL:

"ERROR IN DETERMINATION OF GAUSSIAN QUADRATURE"

A60 A likely solution is to increase the value of the variable TOL. It is currently set at 1.0E-28. The exponent should be increased by increments of 1 until the error disappears. Note that this may cause answers to change. Please review Section J.3.1.1 of the RFP for information on source code changes.

Q61 Can the LSC benchmark HIM be built with MAXCPU undefined?

A61 It would be better to redefine MAXCPU as large a number as is needed.

Q62 It is clear that the data on existing media/platform is expected to be ultimately moved to newer media/technology. The time to complete such a task will be substantial. Does the Government have a time limit for how long they will allow the legacy host platform system to remain operational before all data is required to be on the new system so that the legacy system may be decommissioned?

A62 As stated in RFP Section C.4.5.6, Legacy Archive, the Government requires that the legacy archive be readable by desktop workstations throughout the base contract period, and by the T932, T94, and T3E until they are de-installed. Moving the legacy archive to the new HSMS is one of the possible solutions for legacy archive access noted in this Section.

Q63 Will the Government award higher technical merit to an HSMS solution that shows decommissioning of the legacy data system "sooner" rather than "later"?

A63 The evaluation of proposals will be accomplished in accordance with the discussion provided in RFP Section M. The factors used in the evaluation and their relative importance are cited therein. The evaluation factors for the HSMS are described in Section M.3.3.

Q64 Does the costs associated with the installation, maintenance and monthly service of the proposed upgrade to the GFDL's internet access come from the 94% of the annual funding or from the remaining funds?

A64 These costs are to come from the 94% annual funding.

Q65 The run_lan script of the LAN AC benchmark uses the program 'ftpp'. I'm assuming this is a 'cpp' clone. As cpp doesn't have the -F flag, could you please give us a description about the arguments in order to make sure the correct behavior is replicated?

A65 The -P flag to the ftpp command prevents generation of #line directives. The -F flag to the ftpp command ensures that all macros are expanded throughout the file, rather than only on source preprocessing directive lines. The -D options define preprocessor variables.

Q66 In the revised Section J that was distributed with Amendment 1 of the RFP, Section J.3.2.2.2 contains revised descriptions for each of the 14 experiments in the LSC Throughput Benchmark. For the following experiments, there is a concluding statement in the description that states: "Moreover, the output from segment 1 should not overwrite the output from segment 2": FMS Lo-resolution T42L20 coupled to 2deg MOM3 ocean; FMS Hi-resolution T42L20 coupled to 1deg MOM3 ocean; FMS Lo-resolution T45L20 coupled to 1deg MOM3 ocean; FMS Hi-resolution N90L30 coupled to 1deg MOM3 ocean; HIM p25deg MESO. Since segment 2 for each experiment executes after segment 1, should the statement be revised to say: "Moreover, the output from segment 2 should not overwrite the output from segment 1"?

A66 Indeed, the output from segment 2 should not overwrite the output from segment 1. Section J.3 is revised by Amendment 0002 to reflect this change.

Q67 Amendment 1 of the RFP contains a revised Section J that includes a new definition for the number of jobs in the AC Throughput Benchmark. Will the Government be issuing a revised MS Excel spreadsheet for reporting the required data for this benchmark? This spreadsheet would also have to be modified to change the "EOL" code name to "EIGEN".

A67 New spreadsheets that reflect the correct names and number of jobs in the AC benchmark have been made available at ftp://ftp.gfdl.gov/pub/ben/update_041200/AC_Benchmarks.xls.

Q68 For the Live Test Demonstrations (LTDs), the Government requires each vendor to complete the execution of all LTDs over a two day period - from 9AM to 5PM (local time) on day 1 and from 9AM to 3PM (local time) on day 2. The total amount of time allotted is 14 hours. Given the number of LTDs to be executed and the allowance for vendors to utilize only 25% of the proposed configuration, it is unlikely that a vendor that chooses to run the LTDs with only a 25% configuration will be able to complete all of the LTDs in the allotted two day period. For example, if a vendor proposes to run the LSC Throughput Benchmark on the proposed initial system in 3 hours, but uses only a 25% configuration for the LTD, that LTD will consume on the order of 12 hours to complete, just by itself. That leaves precious little time for the remaining LTDs, not to mention the pre- and post-LTD setup time required between LTDs.

Are Government personnel willing to work longer hours per day for the two day period or will the Government agree to additional days for observance of the LTDs?

A68 Response to be provided in a later Amendment.

Q69 Are the figures in Section C.4.10, Facilities Description and Requirement, available in electronic CAD format?

A69 Response to be provided in a later Amendment.

Q70 Will specifications be provided for the five air conditioning (blazer) units that need to be replaced by the Contractor? What functionality is required?

A70 Response to be provided in a later Amendment.

Q71 Who will maintain the new air handlers once they are installed?

A71: Once the newly installed air handlers have completed their equipment warranty period, the Government will take responsibility for maintaining them.

Q72 Can you describe the sprinkler system in the Computer Room to be used with the HPCS, including specifications for clearance?

A72 Response to be provided in a later Amendment.

Q73 How do you provide chilled water to the computer room when the power fails?

A73 Response to be provided in a later Amendment.

Q74 Will a connection point to the 8" chilled-water pipes be provided?

A74 Response to be provided in a later Amendment.

Q75 Which transformers are used to provide the power whose cost is calculated in Table 4a in Section C.4.10 of the RFP?

A75: The power usage numbers provided in Table 4a in Section C.4.10 represent the total power usage by the GFDL facility for each of the indicated years. Therefore, these numbers

reflect the power currently provided by the GFDL portion of the PSE&G substation, which is currently rated at 2000 KVA.

Q76 How often does the facility lose power?

A76 Response to be provided in a later Amendment.

Q77 Can you provide specifications for the number and size of the user bins? What are the buttons beside the user bins used for?

A77 Response to be provided in a later Amendment.

Q78 How many printers need to be relocated and how are they to be reconnected?

A78 Response to be provided in a later Amendment.

Q79 Can you describe the room containing the Computer Building substation for the computer bulding? In particular, are the walls and ceiling poured concrete?

A79 Response to be provided in a later Amendment.

Q80 What video coverage do you need for the Computer Room? Do you require video recording? How many cameras and how many monitors are required?

A80 Response to be provided in a later Amendment.

Q81 The RFP discusses 50% floor space utilization. What is meant by that?

A81: During previous system installations since the Computer Building was constructed in 1980, the Government has only permitted the new contractor to use 50% of the available floor space. This was done so as to permit a follow-on system to be installed within the other half of the floor space, thereby allowing the Government to operate both systems in an overlapping operations mode. The Government feels that this continues to be a desirable feature.

Q82 Please discuss the Government's concerns regarding the raised floor evaluation. What does the Government expect the Contractor to do and when?

A82 Response to be provided in a later Amendment.

Q83 There is no 480-volt breaker at the present time for a new feeder for the new HPCS equipment within the Computer Building substation. Will the Government provide one?

A83 Response to be provided in a later Amendment.

Q84 How long must the UPS last for system shutdown, as discussed in Section C.4.9.2, entitled "Availability"?

A84 Response to be provided in a later Amendment.

Q85 Where does the Government anticipate the location of the UPS to be?

A85 Response to be provided in a later Amendment.

Q86 Does Princeton University have a standard set of facilities specifications that must be adhered to?

A86 Response to be provided in a later Amendment.

Q87 Is the GFDL facility under the jurisdiction of the National Electric Code?

A87: Yes, because the GFDL buildings are owned by Princeton University, as indicated in Section C.4.10.1.

Q88 Does the Government expect the proposal response to include large-scale floor plans?

A88: As Section L.6.1 indicates, vendor proposals should be formatted on 8.5" by 11" paper. However, large-scale floor plans are likely to be required by Plainsboro and Princeton University for construction permits.

Q89 Will the Government publish a list if the attendees at the Site Visit?

A89: The list of attendees at the Site Visit is provided at the AMD Solicitation website, http://www.rdc.noaa.gov/~amd/90030.html .

Q90 The COUPLED_bench/makefiles/TEMPLATEgrid file CPPFLAGS setting is not what was used to build the code that generated the COUPLED_bench/verify/thruput/N45 files in COUPLED.tar. Please provide the correct CPPFLAGS setting.

A90 The benchmark should be run as the verification output states: The TEMPLATEgrid file should be altered to compile with -Dexplicit_free_surface_linear. The N90 case which uses TEMPLATEgridN90 and should remain with -Dexplicit_free_surface_nonlinear.

Q91 There is a discrepancy in the dates specified in the run script vs the dates printed in the verify file for the FMS Hi-resolution N270L40 Atmosphere LSC Scaling Study. The dates specified in the run script are in namelist coupler_nml as &coupler_nml
current_date = 1980, 1, 1, 0, 0, 0, and they are printed in the logifile as:
current date used = 1980 January 1 0:00:00 gmt while in the verify logfile they are printed as:
current date used = 1980 January 1 1:09:00 gmt

Please confirm that the verify output was generated from the provided run script.

A91 The dates specified in the runscript in namelist coupler_nml are correct. The proper verify files for the scaling benchmark N270 script are present in the thruput verify directory (1980jan01h01.logfile.out, and the first 5 entries of 1980jan01h01.dynam_integral.out.) No entry is made for 1980jan01h01.diag_integral.out during the 12 minutes of the scaling run.

Q92 In the SEASONAL benchmark, we are missing some routines (pxfgetenv, utopen, utmake, utdec, uttime, utorigin, utfree, utcvt). Can you tell us where we get these routines?

A92 The functions utopen, utmake, utdec, uttime, utorigin, utfree, and utcvt are part of the required udunits library, which is available from http://www.unidata.ucar.edu. The subroutine pxfgetenv retrieves environment variables from within a fortran program. For example, CALL PXFGETENV('NETCDF_FFIOSPEC_A',LNAME,NEWFF_A,NCHARSA,IRET) searches for the environment variable NETCDF_FFIOSPEC_A and places its value in the character variable NEWFF_A (of length NCHARSA). LNAME is the length of the first argument, or, if 0, truncates trailing blanks when placed in NEWFF_A. IRET is an error indicator. A functionally equivalent substitute for this subroutine would constitute a Class A source code change, as defined in Section J.3.1.1 of the RFP.

Q93 How can Offerors access the Computer User's Guide referenced in Section C.3.6 of the RFP?

A93 The Computer User's Guide is available off of the secure Vendor web site at http://www.gfdl.gov/conops/GFDL_User_Guide/guide.book.html

Q94 Does this RFP request OpenMP capability and tools to be included with the systems bid?

A94 OpenMP is not required software for this RFP. Employing OpenMP in the benchmark codes constitutes a Class C source code change. Offerors are advised to review Section J.3.1.1, Source Code Changes, for a description of the Government's source code change classification scheme.

Q95 From this offeror's research, Helvetica appears to be a universally available font, while Helvetica-Oblique is much less generally available, and is described by Adobe as an "italicized Helvetica". To reduce confusion and increase the offeror's ability to prepare a PDF document in the offeror's standard word processing application, please allow Helvetica-Oblique or Helvetica italicized as the font for reproducing the instruction in the proposal. Our recommendation would be to change every instance of "Helvetica-Oblique" in the solicitation to read "Helvetica-Oblique or italicized Helvetica".

A95 Agreed. Amendment 0002 will revise Section L.6.1, TECHNICAL PROPOSALS, of the RFP to read "Helvetica-Oblique or italicized Helvetica".

Q96 What are the data retention requirements of the user data presently in the silos? Does a single data retention requirement apply to all data in the silo?

A96 At present, all data is retained in the silos indefinitely.

Q97 Of the 760 GB of disk storage presently on the T94, 500 GB is allocated to staging disks for data in the tape archive and 260 GB is allocated to temporary storage disks. Please verify.

A97 On the T94, approximately 500 GB of disk is assigned to archive, approximately 140 GB are assigned to temporary storage, and approximately 75 GB are assigned to home directories. The remainder of the disk is assigned to various other small filesystems.

Q98 What product, if any, is used to perform backups now?

A98 For the T94, T932, and T3E, the Unicos dump command is used, addressing manually-mounted STK Timberline 3490E-compatible tape drives hosted by the T94. For the T932 and T3E, local scripts run the dump command via a remote shell which pipes its output over HIPPI to the T94 and then to tape. The workstation home directories are hosted by an IRIX workstation, and are backed up to a 8mm tape drive via the IRIX dump command.

Q99 On a per platform basis, please identify what data and how much of it is currently backed up.

A99 For all three Cray systems (T94, T932, and T3E) the operating system and spooling filesystems are backup. For a full backup, this is about 20 GB total for all three Crays combined. For the /archive filesystem (on the T94), the inodes of all files, and the data for files smaller than 4 KB, are backed up, a total of about 5 GB for a full backup. The T90 home directories (on the T94) and the T3E home directories are backed up. For a full backup, this is about 60 GB for the T90 homes and about 40 GB for the T3E homes. Each Cray has fast-scratch and semi-permanent filesystems that are not backed up. So, the total data for a full backup of all three Crays is about 125 GB. The workstation home directories, on a SGI Indigo2 workstation, are backed up to 8mm tape. This is about 5 GB for a full backup.

Q100 Are any databases backed up?

A100 The T94 operating system and spooling filesystems that are backed up include the data migration facility's databases and journal files.

Q101 What is the backup schedule? How much data is backed up daily? What is the largest backup file?

A101 Backups are organized as daily incremental dumps, weekly full dumps, and monthly history dumps. Incremental and full dumps are done to a pool of tapes that is re-used cyclically. Each daily incremental dump is about 10 GB of data. Incremental dumps are bound by disk search speed, and take about 2 hours on each Cray system.

Q102 What are the largest data backups and how long do they take?

A102 Each full or history dump is about 125 GB of data. Full dumps are bound by tape I/O and HIPPI network speed, and take about 5 hours on each Cray system.

Q103 How many copies of user data are made with respect to the archive?

A103 Unicos DMF is configured to make one tape copy of each file that is migrated.

Q104 How many copies of backup data are made with respect to the archive?

A104 For the /archive filesystem, the inodes of all files, and the data for files smaller than 4 KB, are backed up to tape. This is a total of about 5 GB for a full backup. For /archive, a full backup is done every day. There is only one copy of this daily full backup.

Q105 Does the 100 TB of data in the silo(s) includes multiple copies of user data? Is the backup data amount included in this 100 TB?

A105 The 100 TB of data in the silos may, at the users' discretion, include multiple copies of some archived files. Backup data is not included in the 100TB figure - this figure represents user data only.

Q106 Section 3.4 states that the growth rate of the archive has averaged 2.5 TB/month over the last year. What is the growth rate projected for each year of the next 3 years? If not known, what minimum assumptions should the vendor make with respect to this growth rate?

A106 The projected growth rate is difficult to estimate, because it depends in large part on the frequency at which users save history data over the three year period. For example, the rate at which data is saved can increase by a factor of 30 when daily averages of model variables, rather than monthly averages, are saved. Alternately, doubling the model resolution, coupled with a 3x increase in throughput, indicates an increase in the data archiving rate by a factor of 24. Note that the required 1000 TB nearline and 1000 TB offline capacities by the end of FY 2003 support a constant data archiving rate of 55 TB per month, an increase by a factor of 22 over the present rate.

Q107 Section 4.2.3 (HSMS) specifies the HSMS must provide the ability to store a minimum of 10,000,000 archived files. Please verify if required at beginning of contract.

A107 The HSMS must provide the ability to store a minimum of 10,000,000 archived files at beginning of contract.

Q108 Section 4.2.3 (HSMS) specifies that the HSMS must provide the ability to store files of

up to 100 GB in size. Please verify if required at beginning of contract. Also, please delineate if there are any restrictions on how these 100 GB files are physically stored in the archive.

A108 The HSMS must provide the ability to store files of up to 100 GB in size at beginning of contract. The Government desires that files of any size are stored on as few tapes as possible.

Q109 Section 4.2.3 (HSMS) specifies a minimum of 160 and 200 DMA/s aggregate sustained transfer rate between disk and nearline media for access to small and large files, respectively, as well as a minimum aggregate tape-positioning rate of 1200 mounts per hour for access to small frequently used files. Please verify if required at beginning of contract.

A109 A minimum of 160 and 200 DMA/s aggregate sustained transfer rate between disk and nearline media for access to small and large files, respectively, as well as a minimum aggregate tape-positioning rate of 1200 mounts per hour for access to small frequently used files, are required at the beginning of the contract.

Q110 Section 4.2.3 (HSMS) specifies a commensurate upgrade to the capacity of the disk must be made if disk is required for caching or staging of files within the HSMS. Is "commensurate" referring to the requirement directly above it that is asking for at least one substantial upgrade in the aggregate sustained transfer rate between disk and nearline media during the base contract period?

A110 Yes.

Q111 Section 4.2.3 (HSMS) specifies a legacy archive readable and writable by the T94, T932, and T3E until these systems are de-installed. If a new archival system is available where all new data can be written by the T94, T932, and T3E, is it still a requirement that these servers have write authority to the old archival system?

A111 Yes. This requirement provides users the opportunity to group related files on the legacy archive as experiments are completed on the legacy Cray systems, without changing current scripts or code.

Q112 Section 3.4 (Data Archive) states "There are also files stored in Cray-proprietary COS-blocked format, and cpio files that have Cray binary headers". Section 4.5.6 (Legacy Archive) states "Offerors are reminded that COS-blocked file and cpio files with Cray binary headers will remain in the legacy archive." Neither Section 4.2.3, the HSMS Requirements, nor section 4.3.3, the HSMS Desired Features, actually identifies a requirement with respect to

this type of data. What is the actual requirement with respect to COS-blocked files and cpio files with Cray binary headers? Is it sufficient if this data remains available in the legacy or new archive, but readable only by a Cray machine not provided as part of this proposal? How many of these types of files are there?

A112 The Government requires that the data in the legacy archive be readable as cited in RFP Section C.4.5.6. Offerors must propose a solution that includes reading the COS-blocked files and cpio files with Cray-binary headers. Possible solutions include, but are not limited to, using the T94 or some other platform/software combination that can read COS-blocked files, and scripts that can convert Cray-binary headers to ASCII character form in cpio files. The amount of data in COS-blocked files and cpio files with Cray-binary headers is unknown.

Q113 With respect to section 4.2.3, a requirement specifies for the presentation of the data archive to the users as a single /archive filesystem image. Does this mean a single /archive filesystem with one physical mount point? If so, what is the driving force for this requirement?

A113 The requirement is for a single /archive filesystem image, not a single filesystem.

Q114 With respect to section J.3.4, instead of executing the HSMS Archive Benchmark at proposal submittal time, is it sufficient to provide the throughput analysis for the system proposed?

A114 According to the instructions in RFP Section L.6.1, the proposed archive benchmark performance time must be provided in the Offerors' response. Running the archive benchmark at the LTD may reduce the risk assigned to the proposed benchmark performance.

Q115 With respect to Section J.3.4, could you please clarify the expectation for how similar the test HSMS system should be at proposal submittal time versus at LTD and install? For example, what is the expectation for the actual RAID to be used during the benchmark run at proposal submittal time? What about other SAN components? Or, is the focus mostly on the interconnect between the AC and HSMS?

A115 For technical proposal TAB 5, Benchmarks, describe the archive benchmark planned for the pre-award LTD, and give its expected execution time. For technical proposal TAB 8, HSMS, instruction 28, Performance Levels, give the expected execution time for the archive benchmark run on the complete HSMS at installation and any proposed upgrades. To the extent that these execution times cannot be proven in advance, estimation must be used by the offeror. The pre-award LTD configuration should focus on factors that significantly affect file transfer performance. At the pre-award LTD, use of a different disk subsystem or filesystem than proposed will be evaluated as risk.

Q116 With respect to Section J.3.4, the HSMS Archive Benchmark, could you please clarify the

goals of the benchmark results submitted with the proposal?

A116 For technical proposal TAB 5, Benchmarks, describe the archive benchmark planned for the pre-award LTD, and give its expected execution time. For technical proposal TAB 8, HSMS, instruction 28, Performance Levels, give the expected execution time for the archive benchmark run on the complete HSMS at installation and any proposed upgrades. The pre-award benchmark is limited to file transfers, while the installation benchmark, run on the complete HSMS, also includes robotic tape mounts and possibly file staging to HSMS disk. So, the pre-award benchmark must show that the file transfers alone complete with enough time left over to perform these additional operations within 3600 seconds, or less time if proposed.

Q117 What are the current per-user and per-group disk space quotas for the /home filesystems?

A117 For the T90 home directories, only per-group quotas are used. Per-group quotas vary from less than 1 GB to about 15 GB, depending on the group. Division of space between users within the group is managed manually by each group. The T3E home directories do not have disk quotas at present. For the workstation home directories, only per-user quotas are used. Per-user quotas vary from 20 MB to about 100 MB.

Q118 How large are the current home directories hosted by the T94 (/t90) and by the T3E (/t3e)? How large are the current home directories (/home) hosted by some other central server?

A118 The home directories hosted by the T94 are allocated approximately 80 GB of disk space implemented on four filesystems of about 20GB each, those on the T3E are allocated approximately 68 GB of disk space implemented on four 17 GB filesystems, and workstation /home directories are allocated approximately 16 GB of disk space implemented on eight 2 GB filesystems.

Q119 In the current configuration, are the /home directories on the T932, T94 and T3E there because of the performance offered by these machines or because that is where there happened to be space and machine cycles to host them there?

A119 In the past, GFDL's supercomputers were configured with local home directories so that supercomputer time would not be lost because a home directory server was down. This principle was applied to the T932 and the T3E when they were installed. In addition, these local Cray filesystems performed well on large files. The T94 was installed to provide a platform for the /t90 and /archive filesystems more reliable than the T932. The performance limitations of this arrangement were accepted as a trade-off. The T932 NFS hard-mounts these filesystems, which causes the T932 to go idle when the T94 is down. From the T932, reading a file via NFS v.2 over HIPPI runs at about 1 MB/sec. This low performance was offset by using rcp for most accesses to /archive and /t90. rcp is invoked transparently by wrapper scripts for cp and mv.

Q120 Reference C.4.10.6 Facility Renovations. There is a requirement to modify the existing room configuration to a Printer/User area and a new Operations room. At some point in time, this will be a construction site for possibly a week and will not be available to the local staff members. This contractor assumes that the Government can handle the printer input/output without the use of bins. If this is not acceptable, please provide the requirements for a temporary solution.

A120: The Government recognizes that there will be significant transition issues to be worked out during the construction of the two rooms and is willing to work with the contractor to develop a reasonable procedures for addressing such requirements during this transition.

Q121 Reference C.4.10.6 Facility Renovations. There is a requirement to relocate nine (9) existing printers. For planning purposes of placing new equipment in the computer room, please advise when construction of the printer room can start and when the printers can be relocated. This contractor would like to have the option of relocating the printers prior to equipment arrival on December 1, 2000.

A121 Response to be provided in a later Amendment.

Q122 Reference C.4.10.6 Facility Renovations. There is a requirement to relocate existing workstations to the proposed new Operations Room. Please advise how many, how are they to be reconnected, and what furniture (if any) is required.

A122 Response to be provided in a later Amendment.

Q123 Reference C.4.10.6 Facility Renovations. During the Site visit, we were informed verbally that power poles in the new printer room and operations room, a path for power and signal cables from the ceiling to the equipment, are an acceptable alternative to a raised floor. Please confirm this.

A123 Response to be provided in a later Amendment.

Q124 Reference C.4.10.6 Facility Renovations. The assumption is made that the new Operations Room will be staffed by Government employees. Will the government provide offices for the Contractor staff.

A124 Response to be provided in a later Amendment.

Q125 Reference C.4.2.8 Facilities. Amendment 1 expanded the power analysis and requirements in this section. The first bullet implies that the existing power system, 2000 KVA transformer and 1500 KVA transformer will be adequate to handle a new load of HPCS equipment which does not exceed 675 KVA. We believe that this should be the limiting factor for the new load. In a power analysis, there are two ways of looking at the system. One is to look at the load and the other is to look at the source. This contractor looks at the load and cannot address the issue of the source. The source is provided through a complex algorithm based on all loads and the final result is determined by the utility company. During the site visit, a statement was made that the intent is to have the utility company replace the 2000 KVA transformer if the there is a justifiable need which can be demonstrated through a connected load analysis.

The second paragraph of paragraph C.4.10.2 puts the responsibility of the 2000 KVA transformer on the contractor. The load on this transformer keeps changing with addition of chillers 2 and 3 for which no KVA data is available. We request that all statements concerning the responsibility of replacing the 2000 KVA transformer be deleted.

A125 Response to be provided in a later Amendment.

Q126 What are the instructions for sending the Government's evaluation forms for reference sites? Does each COTR send in their evaluation? If so, where? Do they send them to both sites, GFDL and NOAA contracting? Do we only provide POC and let the government contracting office call the reference site and discuss evaluation?

A126 Offerors are to provide the information requested in Section L.6.3, PAST PERFORMANCE, (e.g., Procurement Activity and address, Procuring Contracting Officer’s name, telephone number, and address, Technical point of contact’s name, telephone number, and address, etc.). This information shall be submitted with the Offeror’s initial proposal to the addresses specified in Section L.5.4, PAST PERFORMANCE. The Government will then contact the references provided and any other known references, utilizing the format provided in Section J.3, PAST PERFORMANCE EVALUATION QUESTIONNAIRE, to record the past performance information offered by the references.

Q127 How many total user accounts are there? Of those, approximately how many of those accounts are active? (Note: active means the user has, at least, 1 CPU cycle over the past year)

A127 There are 228 users of which 171 are active.

Q128 What is the total capacity of the COS-blocked and cpio files with Cray binary headers?

A128 This quantity is unknown.

Q129 Are there any files written by users directly to tape and/or that exist outside of DMF's control?

A129 No.